National Institute of Environmental Health Sciences

South African crop farming and climate change: An economic assessment of impacts

Author(s): Benhin JKA
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Abstract:

This paper assesses the economic impact of the expected adverse changes in the climate on crop farming in South Africa using a revised Ricardian model and data from farm household surveys, long-term climate data, major soils and runoffs. Mean annual estimates indicate that a 1% increase in temperature will lead to about US$ 80.00 increase in net crop revenue while a 1 mm/month fall in precipitation leads to US$ 2.00 fall, but with significant seasonal differences in impacts. There are also significant spatial differences and across the different farming systems. Using selected climate scenarios, the study predicts that crop net revenues are expected to fall by as much as 90% by 2100 with small-scale farmers been most affected. Policies therefore need to be fine-tuned and more focused to take advantage of the relative benefits across seasons, farming systems and spatially, and by so doing climate change may be beneficial rather than harmful.

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Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES)

Special Report on Emissions Scenarios (SRES) Scenario: SRES A2

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Extreme Weather Event, Food/Water Security, Food/Water Security, Precipitation, Temperature

Extreme Weather Event: Drought

Food/Water Security: Agricultural Productivity

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Other Geographical Feature

Other Geographical Feature : Farmland

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Country

Other African Country: South Africa

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Cost/Economic

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Workers

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content